REMARKS

Administrative Overview

Claims 1-17 remain pending in this application and are presented for reconsideration. Applicants hereby amend claims 1-3, 6, 7, and 12-17 as indicated in the Listing of Claims. Support for these amendments can be found in the specification as filed, and at least at paragraphs [0014], [0018], [0028] and [0038]-[0041]. Applicants hereby add new claim 18. Support for this claim can be found in the specification as filed, and at least in FIG. 2A. No new matter is added.

In the Office action mailed on August 18, 2006, claim 13 was rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as their invention.

Claims 1-3 and 5-11 were rejected under 35 U.S.C. §103(a) as unpatentable over Berthold *et al.* (Sensors and Actuators 82, 224-228, (2000)) (hereinafter "Berthold") in view of International Application No. PCT/JP03/00570 to Fukushima *et al.* (hereinafter "Fukushima").

Claim 4 was rejected under 35 U.S.C. §103(a) as unpatentable over Berthold and Fukushima as applied to claim 1, and in further view of Sarro (Sensors and Actuators A: Physical, 82(1), pp. 210-218, (2000)) (hereinafter "Sarro").

Claim 12 was rejected under 35 U.S.C. §103(a) as unpatentable over Berthold and Fukushima as applied to claim 1, and in further view of Applicants disclosure (¶[0026]).

Claims 13, 14, and 15 were rejected under 35 U.S.C. §103(a) as unpatentable over Berthold and Fukushima as applied to claim 1, and in further view of the combined teachings of U.S. Patent No. 6,550,337 to Wagner *et al.* (hereinafter "Wagner"), Sarro, Schmidt (Proceedings of the IEEE, 86(6), 1575-1585, (1998)) (hereinafter "Schmidt"), and Lee *et al.* (J. Vac. Sci. Tech. B 12(6), 3425-3430, (1994)) (hereinafter "Lee").

Claims 16 was rejected under 35 U.S.C. §103(a) as unpatentable over Berthold and Fukushima as applied to claim 1.

Finally, claim 17 was rejected under 35 U.S.C. §103(a) as unpatentable over Berthold and Fukishima as applied to claim 1, and further in view of the combined teachings of Wagner, Sarro, Schmidt, and Lee as applied to claim 13.

For the reasons that follow, Applicants respectfully submit that the claims, as amended, are patentable over these references. Therefore, Applicants request reconsideration and withdrawal of the rejections.

Claim Rejection Under 35 U.S.C. § 112

Claim 13 was rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as their invention.

Claim 13 has been amended to recite "*providing a second substrate having an elastic modulus greater than about 300 gigaPascals.*" Support for this amendment can be found throughout the specification, and at least at paragraphs [0014] and [0018] of the application as filed. No new matter has been added hereby.

Applicants respectfully submit that the foregoing amendment to claim 13 overcomes the Examiner's rejection thereof. Applicants therefore request reconsideration and withdrawal of the above rejection of claim 13 under 35 U.S.C. §112, second paragraph.

Claim Rejections Under 35 U.S.C. § 103(a)

Claims 1-3 and 5-11 were rejected as unpatentable over Berthold in view of Fukushima.

Berthold appears to describe a "*glass-to-glass wafer*" with a thin film deposited on at least one of the glass wafers to promote a sodium diffusion layer in order to attain anodic bonding between the two glass wafers. The thin film is generally 200 nm thick, and may include silicon carbide. See Berthold, page 225, column 1, paragraph 2. The purpose of the thin film is merely to provide a bonding element to allow the anodic bonding of the two glass wafers. See Berthold, page 224 and 225.

In contrast to using a thin film to anodically bond two glass wafers together, Applicants' invention, as claimed, anodically bonds a glass layer directly to "*a first substrate having an elastic modulus greater than about 150 gigaPascals*" (i.e. a material other than glass, such as silicon carbide), without the use of an intervening thin film. For example, Applicants' independent claim 1, as amended, recites "*a first layer comprising a glass*," "*a first substrate having an elastic modulus greater than about 150 gigaPascals*," and "*applying a voltage between the first layer and the first substrate to cause an effective anodic bond to form directly between the first layer and the first substrate*." As such, claim 1 specifically requires the anodic bonding of a substrate other than glass, such as a polycrystalline silicon carbide substrate, directly to a glass layer. See, also, paragraph [0010] of the specification as filed. This substrate is an independent wafer element of the MEMS device, and is not merely a thin film used to provide a bond between two glass wafers of a device, as described in Berthold.

Moreover, as can be seen in FIGS. 2A and 3 of Applicants' specification, the substrate may be of approximately the same thickness as the glass layer to which it is anodically bonded, or may possibly be thicker. It is well known to one skilled in the art that a wafer layer used in a MEMS device will generally have a thickness on the order of 10-1000 μm. For example, the glass layer of the current invention must be greater than 10 μm prior to thinning. See paragraph [0018] of the specification as filed. As such, the first substrate of claim 1 is at least approximately two orders of magnitude thicker than the 200 nm thin film of Berthold. This is hardly surprising, as the first substrate of claim 1 is a functional component of a MEMS device, and is not merely a thin film used to bond two wafers of a device. The claimed elastic modulus of the first substrate, and its thickness, allows for a MEMS device manufactured in accordance with claim 1 to exhibit the advantages described with reference to FIG. 3 and paragraphs [0038]-[0041] of the Applicants' specification. A thin film (200 nm thick) of silicon carbide, as described in Berthold, could not provide the structural or performance benefits of such a device. As such, the thin film of Berthold does not, and cannot, provide the same structural properties or functionality as the first substrate of Applicants claimed invention.

Applicants respectfully submit that the disclosure of Fukushima fails to cure the deficiencies of Berthold with respect to independent claim 1. Fukushima appears to describe a method of manufacturing a hermetic seal package. Fukushima does not, however, teach or suggest anodically bonding "*a first layer comprising a glass*" directly to "*a first substrate having an elastic modulus greater than about 150 gigaPascals*," as recited by Applicants' independent claim 1. The Applicants, therefore, submit that neither Berthold nor Fukushima, alone or in proper combination, teaches or suggests every element of Applicants' amended independent claim 1.

Because claims 2-3 and 5-11 depend, either directly or indirectly, from amended independent claim 1, and include all of the limitations thereof, Applicants respectfully submit that these claims are allowable as well. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1-3 and 5-11 under 35 U.S.C. §103(a) as being patentable over Berthold in view of Fukushima.

Claim 4 was rejected as unpatentable over Berthold and Fukushima as applied to claim 1, and in further view of Sarro. Claim 12 was rejected over Berthold and Fukushima as applied to claim 1, and in further view of Applicants disclosure (¶[0026]). Claims 13, 14, and 15 were rejected over Berthold and Fukushima as applied to claim 1, and in further view of the combined teachings of Wagner, Sarro, Schmidt, and Lee.

Each of these rejections relates to claims that depend from independent claim 1. Applicants respectfully submit, however, that none of the cited references, either alone or in proper combination, teaches or suggests anodically bonding "*a first layer comprising a glass*" directly to "*a first substrate having an elastic modulus greater than about 150 gigaPascals*," as recited by Applicants' independent claim 1. Accordingly, neither Wagner, Sarro, Schmidt, nor Lee cures the deficiencies of Berthold and Fukushima with respect to amended independent claim 1. Moreover, paragraph [0026] of Applicants' specification is not prior art to Applicants' amended independent claim 1. Thus, because claims 4 and 12-15 depend, either directly or indirectly from amended independent claim 1, and include all of the limitations thereof, Applicants respectfully submit that they are allowable as well. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejections of claims 4 and 12-15 under 35 U.S.C. § 103(a).

Claims 16 was rejected over Berthold and Fukushima as applied to claim 1. However, as claim 16 incorporates all the limitations of Applicants' amended claim 1, it too is patentable over Berthold and Fukushima for at least the same reasons as discussed above with respect to Applicants' amended independent claim 1.

Claim 17 was rejected over Berthold and Fukushima, and further in view Wagner, Sarro, Schmidt, and Lee.

Applicants' amended independent claim 17 recites "*a MEMS component comprising a glass layer*," "*a device package formed from polycrystalline silicon carbide*," and "*applying a voltage to form an effective anodic bond between the MEMS component and the package*." As discussed above, Berthold appears merely to disclose a thin film of silicon carbide (of 200 nm thickness) to bond together two glass wafers, and not the "*device package formed from polycrystalline silicon carbide*" of Applicant's claimed invention. See, also, paragraph [0038] and element 320 of FIG. 3 of Applicants' specification. Accordingly, Berthold also does not, and cannot, describe "*applying a voltage to form an effective anodic bond between the [glass] MEMS component and the [polycrystalline silicon carbide] package*," which is also required by Applicants' amended independent claim 17.

Moreover, as discussed above with respect to claim 1, due to differences in thickness between Applicants' polycrystalline silicon carbide device package and Berthold's thin film of silicon carbide, the thin film of Berthold cannot, and does not, provide the same structural properties or functionality as the device package of Applicants' claimed invention.

Applicants respectfully submit that Fukushima, Wagner, Sarro, Schmidt, and Lee fail to cure the deficiencies of Berthold with respect to independent claim 17, at least because they fail to disclose or suggest "*a device package formed from polycrystalline silicon carbide*," and "*applying a voltage to form an effective anodic bond between the [glass] MEMS component and the [polycrystalline silicon carbide] package*." Applicants therefore submit that Berthold, Fukushima, Wagner, Sarro, Schmidt, and Lee, alone or in proper combination, fail to teach or suggest every element of Applicants amended independent claim 17.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 17 under 35 U.S.C. §103(a).

New Claim 18

With this Amendment and Response, Applicants hereby add new claim 18. Claim 18 depends directly from amended independent claim 1, and Applicants respectfully submit that it is patentable for at least the reasons discussed hereinabove with respect to claim 1.

CONCLUSION

Applicants respectfully submit that, in light of the foregoing amendments and remarks, all of the pending claims are in condition for allowance. Accordingly, the Applicants respectfully request reconsideration, withdrawal of all grounds of rejection, and the allowance of the pending claims in due course. If, in the Examiner's opinion, a telephonic interview would expedite the favorable prosecution of the present application, the undersigned attorney would welcome the opportunity to discuss any outstanding issues and to work with the Examiner toward placing the application in condition for allowance.

Respectfully submitted,

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